

# GENERATION OF UNIFORM SOLID HD LAYERS INSIDE SPHERICAL CAPSULES USING INFRA-RED ILLUMINATION<sup>†</sup>

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Several implosion hydrodynamics issues of cryogenic targets can be investigated with HD or D<sub>2</sub> without the hazards of handling high pressure tritium. However, without the tritium radiation heating, no solid redistribution will occur. In previous experiments we have successfully redistributed solid D<sub>2</sub> or HD by pumping the collision induced vibration-rotation bands characteristic of the hydrogens<sup>1</sup>. In those experiments the infra-red illumination of the solid was unidirectional along one axis of a sapphire container. Here we describe a method for generating uniform solid HD layers in spherical plastic capsules by uniform infra-red illumination. An F-center laser provides infra-red radiation for injection into two ports of the "layering chamber" which in our case is a cooled integrating sphere. The injected radiation diffusely reflects off the 25mm O.D. inner cavity wall resulting in uniform illumination of a 1mm O.D. spherical capsule placed at cavity center. The redistribution of the solid is viewed and recorded using a second orthogonal pair of ports.

<sup>1</sup> "Infra-red redistribution of D<sub>2</sub> and HD layers for ICF", G.W. Collins, D.N. Bittner, E. Monsler, S. Letts, E.R. Mapoles, and T.P. Bernat, JVSTA, to be published

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